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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/006,777      | 11/08/2001  | John L. Galvagni     | AVX-122             | 9869             |

7590 01/16/2003

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EXAMINER

LEWIS, MONICA

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 01/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                 |                   |
|------------------------------|-----------------|-------------------|
| <b>Office Action Summary</b> | Application No. | Applicant(s)      |
|                              | 10/006,777      | GALVAGNI, JOHN L. |
|                              | Examiner        | Art Unit          |
|                              | Monica Lewis    | 2822              |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 25 November 2002.  
 2a) This action is **FINAL**.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 19-25 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 19-25 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 08 November 2001 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
 If approved, corrected drawings are required in reply to this Office action.  
 12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.  
 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
 a) The translation of the foreign language provisional application has been received.  
 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

|   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                           | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 . | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

1. This action is in response to the election filed November 25, 2002.

### *Specification*

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### *Drawings*

3. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: a) 51 (See Page 14 Line 3). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because of the following: a) reference character “114” has been used to designate both intermediate components and passive components (See Page 14 Lines 9-11); b) reference character “160” has been used to designate both electrical connection and terminations (See Page 15 Lines 10 and 11). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: a) 52 (See Figure 5); b) 54 (See Figure 5); c) 66 (See Figure 5); and d) 118 (See Figure 13). A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Objections***

7. Claim 23 is objected to because of the following informalities: a) it depends from itself. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claim 25 is rejected under 35 U.S.C. 102(b) as being anticipated by Takagi et al. (U.S. Patent No. 4,800,459).

In regards to claim 25, Takagi discloses the following:

a) a plurality of first device layers, each such layer having a first series of resistive/conductive patterns thereon and a plurality of via drilled therethrough (See Figure 1);

b) a plurality of second device layers, each such layer having a plurality of via drilled therethrough (See Figure 1);

- c) a unitary device body formed by the bonded union of an interleaved stack of said plurality of first and said second device layers (10), wherein each of said via correspond to a respective portion of the resistive/conductive patterns on the underlying device layer and wherein one of said second device layers forms the uppermost device layer and the lowermost device layer is one of said first device layers (See Figure 1);
- d) a second series of resistive/conductive patterns on an outer layer of said uppermost device layer (See Figure 1);
- e) a plurality of terminations on said unitary body for electrical connection between other electronic devices and various of the resistive/conductive patterns throughout said unitary device body (See Figure 1);
- f) individual passive components (26, 27 and 28) vertically mounted into each of said plurality of via and electrically connected to a portion of said underlying first device layer's first series of resistive /conductive patterns (See Figure 1); and
- g) an electrical connection between each of said passive components and at least a portion of said overlying first device layer's first series of resistive/conductive patterns through a corresponding one of said first device layer's plurality of via (See Figure 1).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 19 and 22-24 are rejected under 35 U.S.C. 103(a) as obvious over Takagi et al. (U.S. Patent No. 4,800,459) in view of Adae-Amoakoh et al. (U.S. Publication No. 2002/0145203).

In regards to claim 19, Takagi discloses the following:

a) a first device layer with a first series of resistive /conductive patterns thereon (See Figure 1);

- b) a second device layer with a plurality of via drilled therethrough (See Figure 1);
- c) a unitary device body formed by the bonded union of the first and second device layers (See Figure 1);
- d) a second series of resistive/conductive patterns on an outer layer of said unitary body (See Figure 1);
- e) a plurality of terminations on said unitary body for electrical connection between other electronic devices and components of said device (See Figure 1);
- f) individual passive components vertically mounted into each of said plurality of via (See Figure 1); and
- g) an electrical connection between each of said passive components and at least a portion of said second series of resistive/conductive patterns on said outer surface of said unitary device body (See Figure 1).

In regards to claim 19, Takagi fails to disclose the following:

- a) a capture pad.

However, Adae-Amoakoh et al. (“Adae”) discloses the use of capture pads (See Page 2 Paragraph 29). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takagi to include the use of capture pads as disclosed in Adae because it aids in the providing an electrical connection among various components.

Additionally, since Takagi and Adae are both from the same field of endeavor, the purpose disclosed by Adae would have been recognized in the pertinent art of Takagi.

In regards to claim 22, Takagi discloses the following:

- a) first and second layers are made of a non-conductive ceramic (See Column 2 Lines 60-62).

In regards to claim 23, Takagi discloses the following:

- a) device is an integrated passive component (See Figure 1).

In regards to claim 24, Takagi discloses the following:

- a) passive components comprise any combination of resistors, capacitors, varistors, and thermistors (See Column 5 Lines 34 and 35).

12. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as obvious over Takagi et al. (U.S. Patent No. 4,800,459) in view of Adae-Amoakoh et al. (U.S. Publication No. 2002/0145203) and Fan et al. (U.S. Patent No. 6,471,525).

In regards to claim 20, Takagi fails to disclose the following:

- a) first and second layers are made of FR4.

However, Fan et al. (“Fan”) discloses the use of FR4 (See Column 2 Lines 12-14). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takagi to include the use of FR4 as disclosed in Fan because it aids in the providing a coefficient of thermal expansion that matches surrounding structures.

Additionally, since Takagi and Fan are both from the same field of endeavor, the purpose disclosed by Fan would have been recognized in the pertinent art of Takagi.

In regards to claim 21, Takagi discloses the following:

- a) device is a printed circuit board (See Figure 1 and Column 2 Lines 52-62).

***Conclusion***

13. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure: a) Shimada et al. (U.S. Patent No. 4,567,542) discloses a multilayer ceramic substrate; b) Ritter et al. (U.S. Patent No. 5,889,445) discloses a multilayer ceramic rc device; c) Sakamoto et al. (U.S. Patent No. 6,241,838) discloses a multilayer ceramic substrate; d) Farnworth (U.S. Patent No. 6,400,008) discloses a surface mount IC; e) Nakatani (U.S. Patent No. 5,888,627); f) Thin Film Passives...Electronics by Pohjonen et al.; g) Fabrication of a fully integrated...processes by Bhattacharya et al.; h) Electrical Behavior of Decoupling...PCBs by Madou et al.; and i) Metal Containing Polymer...Applications by Xi et al.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 703-305-3743. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ML

January 10, 2003



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